

Resilience and Psychological Health:

The role of Procrastination.

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I declare that this thesis is my own work and that, to the best of my knowledge and belief, it does not contain material from published sources without proper acknowledgement, nor does it contain material which has been accepted for the award of any other higher degree or graduate diploma in any university.

Signed

A handwritten signature in black ink, consisting of a series of loops and flourishes, written over a dotted line.

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Table of Contents

Acknowledgements.....	iii
Abstract.....	2
A Background to Resilience.....	3
Mechanisms impacting on resilience.....	7
Coping Style.....	8
Coping and emotion.....	8
Choice and efficacy of coping styles.....	9
Coping, stress and health.....	10
Cognitive Hardiness.....	10
Importance of hardiness components.....	12
Validity of the Hardiness concept.....	13
Explanatory Style.....	13
Procrastination.....	15
Elements of procrastination.....	16
Subgroups of procrastinators.....	18
Procrastination and explanatory style.....	18
Procrastination and coping.....	19
Procrastination, stress and health.....	20
Conclusion.....	21
References.....	23
Abstract.....	2
Resilience.....	3
Mechanisms impacting on resilience.....	5
Coping Style.....	6

Coping, stress and health	7
Cognitive Hardiness	7
Cognitive hardiness and coping.....	8
Cognitive hardiness, stress and health.....	8
Explanatory style.....	9
Explanatory style and other resilience mechanisms	9
Procrastination.....	10
Procrastination and coping	10
Procrastination, explanatory style and cognitive hardiness	11
Procrastination, stress and health.....	11
The present study	12
Hypotheses	12
Method.....	13
Participants	13
Materials.....	13
Measures.....	13
Explanatory Variables	14
Dependent variable measures.....	18
Issues with use of the proposed scales	19
The Life Orientation Test- Revised	19
The Cognitive Hardiness Scale.....	19
The Procrastination Assessment Scale for Students.....	20
Procedure.....	21
Results.....	21
Discussion.....	30

Directions for Future Research.....34

References.....35

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Literature Review

Abstract

This review explores the literature on resilience and the known relationships between resilience and health. The influence of the resilience mechanisms of explanatory style, coping style and cognitive hardiness in prediction of stress and psychological health are examined. Consideration is also given to the interaction of these resilience mechanisms with each other. The importance of successful negotiation of adversity in the development of resilient personalities is emphasised in the literature. It is argued that procrastination is an important element to consider in discussions of resilience, given that it is closely associated with avoidance of, or delay in, dealing with such adversity. Literature reporting the role of procrastination in relation to the above resilience mechanisms is then examined. Recent research suggesting a mediating role for stress in the relationship between procrastination and health is discussed, in relation to interactions between procrastination and resilience / vulnerability factors. Finally, directions for future research are considered.

A Background to Resilience

While Seligman, in the 1970s, was developing the notion of *learned helplessness* to explain the development of depression (Maier & Seligman, 1976), it was noted that not all individuals succumb to helplessness in the face of adversity (Hiroto, 1974). A similar phenomenon was observed by Kobasa (1979) in a study of the health of executives under stress. She found that when experiencing high stress some individuals became unwell, while others consistently maintained their physical and psychological health. Investigators since have attempted to identify the qualities that might provide this psychological advantage, or resilience, in the face of adversity. For the resilient individual this equates to good mental health, functional capacity and social competence (Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003).

The Oxford Dictionary (1976) defines the term *resilient* as “recoiling, springing back; resuming original shape and size after stretching, bending etc.; (of person) readily recovering from depression etc., buoyant” (p. 955). Garmezy (1991) describes resilience not so much as an invulnerability to stress, but as an ability to recover from adverse events. Rutter (2001) emphasises the role of adversity. He makes an analogy with medical science in relation to infectious disease...

“... protection and immunity lies, not in the avoidance of infection, but rather in exposure to small doses, with the body having learned to cope successfully with the pathogen.” (p. 2).

Important in this context is that developing resilience involves not only the presence of adversity but successful engagement with it. It is similar with psychological resilience. While it is known that adverse events produce stress and thereby negative health effects (Holmes & Rahe, 1967), it has also been shown repeatedly that successful negotiation of such events can produce strengthening effects on the

individual (Linley & Joseph, 2004; Rutter & Quinton, 1984), a process described as *adversarial growth* (Linley & Joseph, 2004).

The term *vulnerable* is defined in the Oxford Dictionary (1976) as something “that may be wounded”, or is “susceptible of injury” (p 1305). Thus *vulnerability* suggests the ability to be hurt or damaged, and is associated with a higher risk of negative outcome in the face of challenge. In this context, vulnerability could be considered the reverse of the protective processes involved in resilience. Risk is defined as “exposure to mischance” or to “expose to chance of injury” (Oxford Dictionary, 1976, p. 972). For the purposes of this discussion then, protective and vulnerability factors are seen, respectively, to reduce and increase the risk of negative outcomes following challenging events. Those individuals who possess relatively higher levels of protective qualities and relatively lower vulnerabilities are seen to be more resilient. This discussion could also proceed by considering the individuals capacity to adapt in response to challenging situations. Those who are more resilient have a great capacity for adaptation.

In any discussion of resilience, it is important to consider that adverse events can lead to both positive and negative outcomes, with one event potentially producing a range of effects in the individual. For example, a single negative event, such as a sexual assault, may produce negative effects (eg producing limiting beliefs about the safety of the world, reducing trust in relationships) while at the same time producing positive effects such as an increased sense of personal power, or an increased sense of the value of life. (Frazier, Conlon & Glaser, 2001)

There are a wide range of elements that provide psychological protection or vulnerability and a distinction has been drawn between those elements that are deemed to be stable factors in an individual’s life and those that involve a change mechanism. The former, referred to as *factors*, generally exist from birth and include

qualities such as temperament and IQ, while the latter, referred to as *mechanisms*, include life circumstances such as socio-economic status, continuity or quality of parenting, or interaction with a supportive environment. These factors and mechanisms can be positive or negative in nature, producing potential for protection or vulnerability respectively. They combine and interact depending on an individual's circumstances and life experiences (Zimrin, 1986). For instance, a child who is introverted in temperament, which could be considered a vulnerability factor, may still achieve a strong level of social skills, given the existence of protective mechanisms such as a supportive environment and assistance to negotiate the challenges involved. Similarly, a child with a high IQ (a protective factor) who is exposed to punitive parenting and raised in an environment with poor social support, may experience negative outcomes. Thus, the interplay of resilience and vulnerability is important in determining outcomes.

Rutter (1999) underlines the tendency for protective or vulnerability factors to be multiplicative. For example, a financially and socially impoverished family environment may result in a range of potential risk factors (e.g., poor self-image, reduced opportunities for success, exposure to crime and physical danger, little educational support). The cumulative effects of these factors can produce more profound effects than any one factor alone and may overwhelm any protective qualities that the individual may have (see Rutter & Quinton, 1984). Ollson *et al.*, (2003) suggest that it is unrealistic to attempt to identify single factors as causal in discussions of resilience and vulnerability. These authors emphasise the need to assess both risk (vulnerability) and protective mechanisms in considering adaptation to adverse circumstances. It is the interaction between these risk and protective mechanisms and the circumstances of the adverse event itself which will determine the individual's capacity to adapt.

Research has provided other examples that further underline the interaction of protective and risk elements in the development of resilience. For instance, a variety of outcomes has been observed in those who have grown up in institutional care. Rutter, Kreppner, O'Connor and the English and Romanian Adoptees study team (2001) found that despite profound deprivation early in life, approximately 20% of Romanian adoptees were judged to have normal psychological functioning after spending several years in a supportive family environment. Rutter and Quinton (1984) found that current marital status, and psychological health of the spouse, had a strong bearing on adjustment and levels of psychopathology in women who had been raised in children's homes. Almqvist and Broberg (1999) also noted that current social circumstances had a large impact on adjustment of refugees, regardless of levels of trauma experienced.

These cases illustrate the interactions between the risk mechanisms of early, potentially damaging, experiences and the restorative effects of a positive environment on the one hand, and the potential for increased negative impact on the other (Rutter *et al.*, 2001; Rutter & Quinton, 1984). The therapeutic possibility of resilience mechanisms has become a target for research. Innate protective factors, such as intelligence, or a calm temperament, may allow some children to thrive in challenging circumstances while others are irreparably damaged by their experiences. However, these factors, being present from birth, generally cannot be changed. Various protective mechanisms however, develop through life experiences and thus may be amenable to intervention. For example, research has shown that optimism has positive effects on health (Aspinwall & Taylor, 1992) and also that an individual can be trained to become optimistic in style (Seligman, 1990).

While considering mechanisms that help to build resilience it is also important to consider mechanisms that might interfere with this development and

thus, either prevent the development of resilience or produce vulnerability to negative outcomes. Given the importance placed on negotiating adversity in building resilience, it is surprising that the role of procrastination has received little attention. Those who procrastinate, by definition, purposefully delay the start or completion of a task (Solomon & Rothblum, 1984) and thus would be expected to defer engagement in adverse events, just as they would post-pone taking action on problems to be solved. On many occasions the act of procrastination can result in removal of the problem, as others take up responsibility for the task, or as the opportunity for action passes. Research suggests that individuals who procrastinate have a reduced sense of capacity for negotiating adverse events effectively, and there are links between procrastination and self-esteem in this context (Flett, Blankstein & Martin, 1995). It has been shown that a lack of task focus in dealing with a personal problem leads to increased emotional distress in many circumstances (Endler & Parker, 1990). The act of postponing a task can increase the complexity of a problem such that a favourable outcome becomes more difficult to achieve. It could be expected that those who frequently procrastinate would have less experience with successful negotiation of adverse life events, and thus would be less resilient. In this context, procrastination could be seen as a process which at the least, impedes the development of resilience, and at worst, acts as a vulnerability mechanism.

Mechanisms impacting on resilience

As discussed, a number of risk and vulnerability mechanisms have been considered in relation to the concept of resilience. These include coping style (Lazarus & Folkman, 1984), cognitive hardiness (Kobasa 1979), explanatory style (Seligman, 1990) and to a lesser extent, procrastination (Solomon & Rothblum, 1984).

Coping Style

Billings and Moos (1981) conceptualise coping with life events as “a complex set of processes directed toward moderating the impact of such events on ... physical, social, and emotional functioning”. (p. 140). The literature on coping involves a number of different formulations to describe these processes. Roth and Cohen (1986) differentiate between approach and avoidance as the two basic modes of coping with stress. Carver, Scheier and Weintraub (1989) differentiate between *problem-focussed* and *emotion-focussed coping* as the two main coping styles. However, they also discuss the ambiguities of this terminology. For instance, *problem-focussed coping*, while pertaining to any action oriented towards solving a problem, may involve a range of activity types including planning, seeking assistance or even purposefully delaying action in order to achieve a goal. Similarly, *emotion-focussed* responses can involve denial, positive re-interpretation of events, or seeking out social diversion or the support of others.

Endler and Parker (1990) distinguish between three general styles of coping: *task-focussed*, where the goal is to solve or manage the problem; *emotion-focussed*, where responses are self-oriented with the aim of reducing stress; and *avoidance-oriented* where the aim is to alleviate stress through distraction or social diversion.

Nowack (1989) suggests that each of the formulations above can be subsumed under Roth and Cohen’s Approach/Avoidance model (1986), with *emotion-focus* being considered as an attempt to move away from the problem (an avoidance mechanism).

Coping and emotion

While Folkman and Lazarus (1985) present *emotion-focussed coping* as a broad category, Scheier, Weintraub & Carver (1986) point out that focussing on emotion as a coping mechanism can serve quite different functions. Carver *et al.*,

(1989) found that positive re-interpretation of a problem situation is adaptive, while a primary focus on experiencing feelings can be maladaptive. Both are *emotion-focussed* strategies yet yield quite different results.

Ollson *et al.*, (2003), in a review of literature on adolescent resilience, point out that in response to particularly distressing circumstances, a high level of emotion can be expressed, even while the individual is functioning well. The expression of emotion itself does not necessarily indicate an *emotion-focussed* approach to managing the circumstances. The emotion may be an element of an otherwise *approach-focussed* strategy.

Choice and efficacy of coping styles

Carver *et al.*, (1989) found some evidence to suggest that coping is a personality trait, with links appearing between coping style and personality variables such as optimism and Type A personality. However, these links were modest, and Carver *et al.*, (1989) suggest it is more likely that both personality traits and coping preferences play a role in situational coping. While research suggests that individuals use a range of styles, depending on the type of stressor they face and the level and proximity of the threat (Folkman & Lazarus, 1985), individuals often have preferred styles and thus will be more skilled at using specific coping techniques (Averill & Rosenn, 1972).

The relative efficacy of different coping styles has been shown to depend on a number of factors including the point in time at which effectiveness is evaluated (Folkman & Lazarus, 1985; Tice & Baumeister, 1997), controllability of the outcome (Nowack, 1989; Carver *et al.*, 1993; Taylor *et al.*, 1992; Suls & Fletcher, 1985) and the fit between the individual's preferred coping style and the demands of the situation (Miller and Mangan, 1983). Efficacy is likely to be reduced when an individual is attempting to use a non-preferred style. For example, in facing an

uncontrollable situation, an individual who is well practised at task-focussed problem-solving but inexperienced at using distraction, may be at a disadvantage (Taylor *et al.*, 1992). As the most appropriate coping style will differ depending on the problem encountered, it is thought that the most resilient individual would be the one with the most flexible repertoire of strategies (Rutter, 1990).

Coping, stress and health

Coping style has been shown to impact on psychological health (Higgins & Endler, 1995; Endler and Parker, 1990; Nowack, 1990), with results showing that, in general, approach oriented coping has better effects on psychological and somatic distress than emotion-focussed or avoidant coping (Billings & Moos, 1981; Beasley, Thompson & Davidson, 2003). Murberg, Furze and Bru (2004) found that avoidance coping, particularly behavioural disengagement, was associated with high rates of mortality in cases of congestive heart failure. Sherbourne, Hays and Wells (1995) found that active coping has better effects than avoidance focussed coping on recovery from illnesses such as depression. Those who used an avoidant style were more likely to suffer recurrent episodes of depression than those who took an active approach. Thus, the literature would suggest that in general, the use of an active (or approach) coping style (as per Roth & Cohen, 1986) can protect an individual from the effects of negative events, while use of an avoidant (and in particular, an emotion-focussed) style could be seen as a risk mechanism for poor health outcomes.

Cognitive Hardiness

Kobasa (1979) became interested in the stress-illness relationship, and in particular, why some individuals who experience high levels of stress succumb to illness while others do not. She found that those who retained their health shared common behavioural and cognitive styles. She proposed the concept of *cognitive hardiness* to describe those who are psychologically protected from the effects of

stress. She further proposed that these “hardy” personalities share three general qualities, conceptualised as *Commitment*, *Control* and *Challenge*. Maddi (2002), in a review of the history of hardiness and his experiences in this area of research, defines these concepts as follows.

“...commitment was a predisposition to be involved with people, things, and contexts rather than be detached, isolated, or alienated. Control involved struggling to have an influence on outcomes going on around oneself, rather than sinking into passivity and powerlessness. Challenge signified wanting to learn continually from one’s experience, whether positive or negative, rather than playing it safe by avoiding uncertainties and potential threats.” (Maddi, 2002, p. 174)

The work of Kobasa and her colleagues stems from a background of existential personality theory, which holds that individuals have a drive to find meaning in life (see Orr & Westman, 1990, for a summary). The hardy individual is seen to be optimistic, proactive and courageous, choosing to take an active role in life and seek out change rather than waiting for change to be enforced (Orr & Westman, 1990).

Research suggests that hardiness develops through the experience of turning adversity into opportunity (Khoshaba & Maddi, 1999). Hannah and Morrissey (1986) found that the foundations of cognitive hardiness were established by early adolescence and continued to develop with increases in age and grade.

Cognitive hardiness has been shown to buffer the negative effects of life stress (Kobasa, 1979; Kobasa, Maddi & Kahn, 1982; Beasley *et al.*, 2003; Rhodewalt and Zone, 1989). Rhodewalt and Zone (1989) found that cognitively “hardy” individuals perceived taxing events as less negative than their non-hardy counterparts. Further, these authors found that hardy individuals experienced fewer

symptoms of stress than the non-hardy when facing distressing circumstances.

Nowack (1989) found that hardiness was a strong predictor of psychological distress, but not of physical ill-health.

Orr and Westman (1990) note the scarcity of research that considers interactions between hardiness and other coping and resiliency measures. There have been some efforts to redress this. Beasley *et al.*, (2003) found that while an emotion-focussed style of coping predicted depression, cognitive hardiness was able to partially reduce these negative effects. Sharpley and Yardley (1999) found that both pessimism and cognitive hardiness were significant predictors of depression-happiness among the elderly. Correlations between hardiness and coping style have been reported, suggesting that those scoring high on hardiness tend to choose active or planful ways of dealing with adversity and tend to avoid ruminating over negative intrusive thoughts (Nowack, 1989), instead making positive reappraisals of problem situations (Crowley, Hayslip & Hobdy, 2003).

Importance of hardiness components

Recent studies have questioned the concept of Cognitive Hardiness. Maddi (2002) emphasises the importance of including all three components, *commitment*, *control* and *challenge*, in measuring the hardy personality. He speculates on the effects of individuals having only one or two of the three qualities. Scoring high on commitment or challenge would not preclude one from the negative effects of scoring low on control (and for example, feeling disempowered to take action in one's life). Similarly, scoring high on control does not guarantee health if an individual scores low on challenge (and, for example, is not open to learning new ways of coping with life events).

Validity of the Hardiness concept

While Orr and Westman (1990) in a literature review, found support for the hardiness concept, reporting a high level of consistency of results across a range of measures, Funk (1992) in a review of studies, was not able to support the notion that hardiness consistently acts as a buffer against stress. He noted that 3 out of 4 studies involving students did not find buffering effects. Others have questioned whether hardiness scales are a valid measure of the construct. Some researchers have claimed a correlation between hardiness and neuroticism, particularly when scales include a large number of negative items (Sinclair & Tetrick, 2000). These same authors found support for the notion that positive items on hardiness scales measure hardiness while negative items tap some other construct. These discussions suggest that there is a need for care in both measuring and reporting the effects of hardiness, to ensure that consistency is achieved. Thus, in spite of the above cautions, it would appear that there is some justification for considering the hardiness concept as a potential protective mechanism.

Explanatory Style

Explanatory style is a term used to denote a person's beliefs, whether optimistic or pessimistic, about life events (Seligman, 1990). Specifically, an optimistic explanatory style is associated with a generalised positive expectancy that one will experience good outcomes, while a pessimistic style is associated with negative expectations (Scheier & Carver, 1987). Three distinct cognitive tendencies distinguish optimists from pessimists, those of pervasiveness, permanency and personalisation (Seligman, 1990). If a pessimist experiences misfortune, it is likely to be experienced as pervasive (rather than pertaining only to the specific event in question), permanent rather than temporary, and personally determined (with the

individual believing he or she has caused their own misfortune). As Seligman (1990) suggests, a typical pessimist's response to an adverse life event might be:

"It's me, it's going to last forever, it's going to undermine everything I do."

(p. 44).

Such a stance could be expected to raise feelings of helplessness, which may in turn lead to depression (Seligman, 1990; Hiroto, 1974).

Studies suggest that explanatory style has a significant genetic base (Plomin, Scheier, Bergeman, Pedersen, Nesselroade & McClearn, 1992), that it is well established by adolescence (Seligman, 1990) and that it remains relatively stable throughout life (Peterson, Seligman & Vaillant, 1988). Other research suggests that optimism can be trained (Seligman, 1990), which is made use of in cognitive behaviour therapy for depression (Beck, Rush, Shaw & Emery, 1979). In view of the above, explanatory style is generally seen as a resilience *mechanism*, with optimism at one end of the continuum, having a protective role, while pessimism, at the other end of the continuum, increases vulnerability to the individual, in terms of stress and health.

Much research has shown the effects of explanatory style, and in particular, the benefits of optimism, on health and well-being in adults (Seligman, 1990; Aspinwall & Taylor, 1992; Aspinwall & Brunhart, 1996). This has also been shown to be the case with the elderly (Sharpley & Yardley, 1999) and adolescents (Chang & Sanna, 2004). Optimism has been challenged by critics as being unrealistic or equating with denial, in the face of real problems. However, research has found the opposite. Optimistic beliefs predict greater attention to risk information (Aspinwall & Brunhart, 1996) and greater efforts to manage the situation (Taylor *et al.*, 1992). These findings are supported by other studies that show the psychological benefits of optimism are mediated by the optimist's tendency to use a more active and less

avoidant style in dealing with stress (Aspinwall & Taylor, 1992; Carver *et al.*, 1993; Scheier *et al.*, 1986).

The above research suggests that explanatory style is a resilience mechanism. Optimism is seen to have a strong protective value to an individual when faced with a negative life event while pessimism is seen to increase vulnerability.

Procrastination

Due to the variety of perspectives taken on procrastination as a behaviour, a range of definitions have been proposed (Ferrari, 1995). Solomon and Rothblum (1984) define procrastination as the purposeful delay of the start or completion of a task. Others have chosen to define it on the basis of self-defeating and irrational behaviour, however this is limiting, as research shows that procrastination can sometimes produce positive feelings in the individual, particularly in the short term (Tice & Baumeister, 1997) and is not always seen as a negative behaviour (Milgram, Marshevsky & Sadeh, 1994). Schouwenberg (1995) suggests a multi-dimensional definition involving: “(1) lack of promptness, either in intention or in behaviour; (2) intention-behaviour discrepancy; and (3) preference for competing activities”. (p.72)

There has been little research into the origins of procrastination. Flett *et al.*, (1995) suggest that procrastination behaviours develop from an early sense of uncertainty and insecure attachment to caregivers. They found links between maladaptive styles and general tendencies to have “difficulty finishing projects” (p. 161). These same authors postulate that these individuals may be put further at risk by the tendency to engage in high levels of social comparison. Procrastination has been linked to self-handicapping and self-worth protection (Thompson, 2004) and it has been discussed that procrastination is a failure avoidance mechanism involved in protecting an individual from negative self-evaluation. Research suggests that

development of these mechanisms may stem from parental over-control and high levels of criticism (Thompson, 2004).

Some individuals have a preference for procrastinating behaviour and thus are considered to be 'procrastinators' in the general sense (Schouwenberg, 1995). Others are known to only procrastinate on specific types of task, academic procrastination being a common example. Lay (1986) suggests that academic procrastinators are merely exercising a personality trait exhibited in general procrastinators, that of "post-poning that which is necessary to reach some goal". However, Brownlow and Reasinger (2000) found that academic procrastinators often only procrastinate in a school setting and may not procrastinate chronically in other areas of life. It is estimated that more than 70% of students engage in academic procrastination at some time (Ellis and Knaus, 1977), while only 20-30% of the population procrastinate on general tasks (Harriott & Ferrari, 1996).

Elements of procrastination

Solomon and Rothblum (1984) emphasise the importance of seeing procrastination as a complex interaction of behavioural, cognitive and affective components. Cognitive factors such as decision making (Ferrari & Dovidio, 2000), self-regulating under time pressure or cognitive load (Ferrari, 2001) and time estimation (Lay, 1988) have been investigated. Flett *et al.*, (1995) emphasise links with self-esteem and the self-protective nature of procrastination behaviours. Fear of failure has been addressed as a key factor in reasons for procrastination (Solomon & Rothblum, 1984). Research relating procrastination to personality has shown positive correlations with neuroticism and negative correlations with conscientiousness (Johnson & Bloom, 1995) and with lack of perseverance (Dewitte & Schouwenberg, 2002). Behavioural factors have been shown to play an important role in relation to time management of academic tasks (Lay, 1988; Fritzsche, Young

& Hickson, 2003) as well as treatment delay in the case of illness (Sirois, Melia-Gordon & Pychyl, 2003). Research suggests that academic procrastinators receive lower grades than their non-procrastinating peers (Tice & Baumeister, 1997; Fritzsche *et al.*, 2003). However, research fails to show a link between procrastination and intelligence (Ferrari, 1991) thus it is more appropriate to consider the low performance of the procrastinator as a form of underachievement. As noted, research links procrastination to estimation of time needed to complete a task (Lay, 1988). This can have indirect effects on performance as poor time estimation translates into practical problems such as failing to allow sufficient time to complete tasks, disappointments due to missed deadlines and, in an academic setting, lower grades (Tice & Baumeister, 1997).

Frizsche *et al.*, (2003) found that high procrastinators tended to start writing term papers later than they had originally intended and that they tended to not seek feedback on their work. When feedback was provided grades were seen to improve and the authors speculated that actively seeking feedback facilitates improved time management. This may also reflect changing attitudes towards goals. Procrastination has been linked to the Theory of Planned Behaviour (Ajzen & Fishbein, 1977) and it has been shown that the importance of goals is an important causal factor in predicting study behaviours (Sideridis & Kaissidis-Rodafinos, 2001). Sirois (2004) found a negative relationship between trait procrastination and intentions to engage in health behaviours, a relationship that was mediated by self-efficacy for these types of behaviour. She found that consideration of future consequences did not play a role in this relationship however, suggesting that in procrastinators, intentions to achieve a goal are less important than self-efficacy and the perceived ability to achieve the goal. It is possible that deliberate feedback allows procrastinators to re-

orient themselves towards their goals and perhaps to alter their perceptions as to goal achievement.

Subgroups of procrastinators

A range of subjective reasons is given for procrastination behaviours. Some procrastinators claim to work better under pressure (Ferrari, 1992), some tend to avoid tasks they perceive as aversive or difficult (Ferrari, 1992; Solomon & Rothblum, 1984; Milgram *et al.*, 1994) while others list fear of failure as a reason for post-poning the commencement of tasks (Solomon & Rothblum, 1984). These reasons have been used to differentiate procrastinators into subgroups, such as avoiders versus arousal seekers (Ferrari, 1992) or those who fear failure versus those who avoid aversive tasks (Solomon & Rothblum, 1984). Milgram *et al.*, (1994) differentiates procrastinators on the basis of whether their procrastination behaviour produces upset. Lay (1988) suggests that procrastinators can be differentiated on the basis of explanatory style.

Procrastination and explanatory style

Lay (1988) proposes the existence of two distinct types of underachieving procrastinators differentiated on the basis of explanatory style. The first group could be considered self-content, comfortable with life and likely to overestimate their performance. These are the optimistic procrastinators. The second group could be considered over-anxious, aware of their under-achievement and inclined to perceive tasks as stressful, expecting to experience difficulty in achieving goals. These are the pessimistic procrastinators. Given the known negative links between procrastination and depression / anxiety (Solomon & Rothblum, 1984) and the additional negative health effects of a lack of optimism (Aspinwall & Taylor, 1992; Seligman, 1990) the latter group could be considered to be at high risk for experiencing stress and negative health effects (Flett *et al.*, 1995).

Research suggests that for those who procrastinate, optimism is able to partially predict adjustment to stressful life events (Jackson, Weiss & Lundquist, 2000). However, further investigation into this relationship is warranted.

Procrastination and coping

There has been limited research into the links between procrastination and coping (Flett *et al.*, 1995). Links have been established with the absence of *task-focussed coping* (Schouwenberg, 1995; Flett *et al.*, 1995). Research has shown strong links between *procrastination* and *emotion-focussed coping* (Flett *et al.*, 1995; Corace, Pychyl & Ferrari, 1999). Flett *et al.*, (1995) also found modest correlations between *procrastination* and avoidance in the form of *distraction*.

An additional finding in relation to procrastination and coping was reported by Corace *et al.*, (1999). These researchers found that *procrastination* and *emotion-focussed coping* were closely related and that the effects of *procrastination* as a variable were no longer significant after controlling for the effects of *emotion-focussed coping*. The authors interpreted this to mean that *procrastination* is part of the larger construct of *emotion-focussed coping*. This has yet to be replicated in other studies.

Assessment of procrastination

The most obvious issue pertaining to measurement of procrastination behaviours is the division of such behaviours into general and specific. A number of self-report questionnaires have been developed to assess everyday procrastination, and these are summarised in Ferrari *et al.*, (1995). Similarly, self-report questionnaires designed to tap academic procrastination are summarised in Schouwenberg (1995). Some research includes behavioural measures designed to provide face validity, for example, monitoring delay taken in returning questionnaires.

Procrastination, stress and health

It has been shown that those who procrastinate are more prone to experiencing depression and high levels of worry in evaluative situations (Flett *et al.*, 1995). Strong links between procrastination and perceived stress have also been shown (Tice & Baumeister, 1997; Sirois *et al.*, 2003; Flett *et al.*, 1995; Lay, Edwards, Parker & Endler, 1989; Corace *et al.*, 1999). In spite of this, Schouwenberg (1995), in his discussion of academic procrastination reports that the behaviour does not necessarily imply suffering, and some procrastinators have no wish to change their behaviours. Milgram *et al.*, (1994) point out that those who delay tasks often do not express distress. Many procrastinators would state that their behaviour allows them to avoid stress, and indeed this seems to be the case when deadlines are distant (Tice & Baumeister, 1997).

Tice and Baumeister (1997) found that procrastination was correlated with stress in different ways. In their first study they found a negative correlation with stress, and they hypothesised that this was due to participants actively avoiding stress by procrastinating, and not yet facing the reality of the upcoming deadline. In the second study they found a positive correlation with stress, suggesting that although procrastination produces initial benefits to stress, this benefit is cancelled out by an increase in stress as the deadline approaches.

Similar effects were found for health. Early in the study, with deadlines distant, procrastinators reported less health problems than non-procrastinators, but this trend reversed as deadlines approached. These findings led the authors to propose a mediating role for stress in the relationship between procrastination and health (Tice & Baumeister, 1997). That is, they proposed that the link between procrastination and health is dependent on whether the individual perceives the situation as stressful.

Sirois *et al.*, (2003) investigated this notion in a study looking at the health behaviours of procrastinators. Their study confirmed the hypothesis that stress mediates the relationship between procrastination and health. They also found evidence to suggest a behavioural pathway between procrastination and illness, with procrastinators tending to delay seeking treatment. Put in these terms, procrastination could be considered a risk mechanism for health through indirect pathways.

Conclusion

This paper has presented an overview of recent research into resilience and vulnerability, with particular focus on the mechanisms of coping style, explanatory style and cognitive hardiness. It has also considered the role of procrastination in these processes. The review has highlighted limitations in current knowledge of the relationships between these mechanisms and has also shown insufficiencies in the knowledge of the pathways between these resilience/vulnerability mechanisms and health outcomes.

The resilience/vulnerability mechanisms discussed share common themes including a generalised positive/negative expectancy and a tendency to deal with / move away from negative events. Research comparing resilience/vulnerability mechanisms has been equivocal and the relative strengths of one over another have not been clearly established. The degree to which differing measures tap into the same construct also remains unclear. It would be beneficial to explore which constructs have the most powerful effects, and indeed whether such effects can be separated. In addition, the overlap between procrastination and emotion-focussed coping merits further attention.

Procrastination has received only limited attention in relation to protective or risk mechanisms. The strength of the risk that procrastination produces has not been

set against the benefit of protective mechanisms, such as task-focussed coping, hardiness or optimism. In relation to therapeutic intervention, it would be of use to identify the most significant contributors to stress and ill-health, as well as the strongest protective mechanisms, in order to provide focus on the best direction for treatment. Given the significant negative impact of procrastination in the academic setting, knowledge of the relative costs and benefits of the mechanisms discussed is important.

The literature shows that cognitive hardiness, coping style and explanatory style each have the capacity to affect stress and/or health. A variety of direct and indirect effects have been reported. Given recent findings in relation to the mediating role of stress in the relationship between procrastination and health, it would also be valuable to consider stress as a potential mediator in relation to resilience mechanisms and health. An exploration of the direct and indirect pathways between resilience/vulnerability and procrastination on the one hand, and stress and health on the other, would help to identify which factors, either positive or negative, are the most important in contributing to stress and health.

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Resilience and Psychological Health:

The role of Procrastination.

Empirical Report

Abstract

Pathways of relationships between resilience, procrastination and health were considered. 181 psychology students completed the Life Orientation Test – Revised, the Coping Inventory for Stressful Situations and the Cognitive Hardiness Scale as well as the General Procrastination Scale, Adult Inventory of Procrastination and the Procrastination Assessment Scale for Students. Psychological health was measured using the Perceived Stress Scale and General Health Questionnaire. Factor analysis of coping style, explanatory style, cognitive hardiness and procrastination variables yielded five distinct factors, *Academic Procrastination*, *Avoidance*, *Emotion Orientation*, *General Procrastination* and *Task Orientation*. Direct and indirect effects of these factors on *psychological distress* were found on all but the *Avoidance* factor. Indirect effects were mediated by *perceived stress*. The *Emotion Orientation* factor was seen to produce the strongest effect on both *perceived stress* and *psychological distress*. *Perceived stress* was found to mediate the relationship between *procrastination* and *psychological distress*, which supports the findings of Sirois, Melia-Gordon and Pychyl (2003). In addition, a small but significant positive effect of general procrastination on *psychological distress* was found. Possible explanations for this are discussed. Differences emerged in the effects of positive and negative items on the Cognitive Hardiness Scale, adding to previous suggestions that the two tap different constructs.

Resilience

While Seligman, in the 1970s, was developing the notion of Learned Helplessness to explain the development of depression (Maier & Seligman, 1976), it was noted that not all individuals succumb to helplessness in the face of adversity (Hiroto, 1974). Since that time much research has focussed on the qualities of such apparently resilient individuals. Researchers have attempted to determine firstly the qualities that may provide this psychological protection and secondly whether such qualities can be learnt.

The Oxford Dictionary (1976) defines resilience as the ability to recoil or spring back, or to resume original form after stretching, bending etc. Garnezy (1991) describes resilience not so much as an invulnerability to stress, but as an ability to recover from adverse events. Rutter (2001) emphasises the role of adversity. He makes an analogy with medical science, in relation to infectious disease...

“... protection and immunity lies, not in the avoidance of infection, but rather in exposure to small doses, with the body having learned to cope successfully with the pathogen.” (p. 2).

While it is known that adverse events produce stress and thereby negative health effects (Holmes & Rahe, 1967), it has also been shown repeatedly that successful negotiation of such events can produce strengthening effects on the individual (Linley & Joseph, 2004; Rutter & Quinton, 1984).

To better understand the concept of resilience it is important to explore not only those elements that contribute to psychological protection but also those which increase the risk of harm to an individual, or in research parlance, those which increase the *vulnerability* of the individual. The term *vulnerable* is defined in the Oxford Dictionary (1976) as something “that may be wounded”, or is “susceptible of

injury” (p 1305). Thus *vulnerability* suggests the ability to be hurt or damaged, and is associated with a higher risk of negative outcome in the face of challenge. Risk is defined as “exposure to mischance” or to “expose to chance of injury” (Oxford Dictionary, 1976, p. 972). For the purposes of this discussion then, protective and vulnerability factors are seen, respectively, to reduce and increase the risk of negative outcomes following challenging events.

A large number of protective or risk elements have been proposed. These elements can be divided into two distinct groups on the basis of whether their impact is stable in an individual’s life or fluid and susceptible to change. The former, referred to as *factors*, generally exist from birth and include qualities such as temperament and IQ, while the latter, referred to as *mechanisms*, include life circumstances such as socio-economic status, or interaction with a supportive environment. These factors and mechanisms combine and interact depending on an individual’s circumstances and life experiences (Zimrin, 1986). For instance, a child who is introverted in temperament (a potential risk factor) may still achieve a strong level of social skills, given the existence of protective mechanisms such as a supportive environment and assistance to negotiate the challenges involved. It is important to note that risk and protective effects can co-exist, with a single challenging event producing a range of effects, both positive and negative, for the individual. Often these effects can be multiplicative (Rutter, 1999) and the interactions between positive and negative factors can be complex. Thus, understanding of both protective and risk mechanisms is important.

There are many illustrations of the interaction between the risk mechanisms of early, potentially damaging, experiences and the effects of later environment (Rutter, Kreppner, O’Connor and the English and Romanian Adoptees study team, 2001; Rutter & Quinton, 1984; Almqvist & Broberg, 1999). Differences between

individuals can also be discussed in terms of innate protective factors that may allow some children to thrive while others are irreparably damaged by their experiences.

The distinction between protective factors and mechanisms has been reinforced due to the therapeutic possibilities afforded by each. Protective mechanisms, by their nature, involve change, and thus may be amenable to intervention. While protective factors and mechanisms deserve attention, it is important not to lose sight of risk mechanisms that may undermine resilient qualities or that may prevent resilience from occurring. The common behaviour of procrastination has been proposed as one such risk mechanism (Flett, Blankstein & Martin, 1995). Given the importance of the capacity to engage with adversity in order to build resilience, it is surprising that the relationship between procrastination and resilience has received little attention. Those who procrastinate, by definition, purposefully delay the start or completion of a task (Solomon & Rothblum, 1984) and thus would be expected to defer engagement in adverse events. Research suggests that such individuals have a reduced sense of capacity for negotiating adverse events effectively, and there are links between procrastination and self-esteem in this context (Flett *et al.*, 1995). It could be expected that those who frequently procrastinate would have less experience with successful negotiation of adverse life events, and thus would have less opportunity to develop resilient qualities. In this context, procrastination could be seen as a process that at the least, impedes development of resilience, and at worst, acts as a vulnerability mechanism. This potential vulnerability mechanism could have a significant impact on the relationships between resilience mechanisms and stress / health outcomes.

Mechanisms impacting on resilience

Research literature reveals a range of findings in relation to protective mechanisms including coping style (Lazarus & Folkman, 1984), cognitive hardiness

(Kobasa, 1979) and explanatory style (Seligman, 1990), as well as the effects of procrastination on stress and health. The nature of these effects and their interactions warrant consideration.

Coping Style

Folkman and Lazarus (1980) describe Coping Style as a characteristic manner of confronting and dealing with a stressful situation. A number of formulations have been considered, including Roth and Cohen's model (1986), which differentiates coping on the basis of whether the behaviour aims to approach and deal with a task or to move away, or avoid it. Other models add specificity by, for example, differentiating *emotion-focus* from *avoidance*, which is further divided into *distraction* and *social diversion* (Endler & Parker, 1990a). However, the approach / avoidance model has proven to be a useful conceptual framework (Nowack, 1989).

It is generally considered, under Roth and Cohen's approach / avoidance model, that *emotion-focussed coping* is an avoidance mechanism. The concept has received much attention in the coping literature. When stress levels are high it is common to see expression of emotion, however, this expression does not equate to an *emotion-focussed coping* approach, as emotional expression may be an element of an otherwise *approach-focussed* strategy (Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003). There are times when focus on emotion can be seen as adaptive, for example, when attempting to positively re-interpret a problem situation (Carver, Scheier & Weintraub, 1989). This illustrates the potential ambiguities in differentiating coping styles, as in this instance, rather than an avoidance mechanism, emotion-focussed coping could be considered an approach, or *task focussed* behaviour.

While it is known that individuals choose different coping strategies depending on the circumstances that they encounter, often an individual will have a preference for a particular style (Averill & Rosen, 1972) and will become practised at using that style at the expense of others (Taylor *et al.*, 1992).

The relative efficacy of different coping styles has been shown to be dependent on a number of factors including the point in time at which effectiveness is evaluated (Folkman & Lazarus, 1985; Tice & Baumeister, 1997), controllability of the outcome (Nowack, 1989; Carver *et al.*, 1993; Taylor *et al.*, 1992; Suls & Fletcher, 1985) and the fit between the individual's preferred coping style and the demands of the situation (Miller & Mangan, 1983).

Coping, stress and health

Research has shown that choice of coping style can have a significant effect on psychological and physical wellbeing (see Suls & Fletcher (1985) for a review). It has been well established that active, or approach based, coping has better effects on health than avoidant styles (Flett *et al.*, 1995; Endler and Parker, 1990a) particularly when *emotion-focussed coping* is the style of choice (Beasley, Thompson & Davidson, 2003; Corace, Pychyl, & Ferrari, 1999; Higgins & Endler, 1995; Nowack, 1989). Avoidance coping has been associated with negative health effects such as high rates of mortality in cases of congestive heart failure (Murburg, Furze & Bru, 2004) and increased rates of relapse in depression (Sherbourne, Hays & Wells, 1995). In terms of resilience, it could be considered that task (or approach) oriented coping is a protective mechanism, whereas emotion-focussed coping and other avoidance oriented coping styles could be considered risk mechanisms.

Cognitive Hardiness

Kobasa (1979) proposed a theory that resilient personalities can be measured in terms of three key features, those of control, commitment and challenge. The first

of these refers to commitment to elements in one's life (eg political beliefs, family roles or self). The second refers to the capacity to have an impact on one's environment or life, and the third refers to one's view of life changes as challenging rather than threatening (Kobasa, 1979).

Research suggests that hardiness develops through the experience of turning adversity into opportunity (Khoshaba & Maddi, 1999). Hannah and Morrissey (1986) found that the foundations of cognitive hardiness were established by early adolescence and continued to develop with increases in age and grade.

Cognitive hardiness and coping

The elements of hardiness (Kobasa, 1979; Maddi, 2002) correspond to an approach based attitude of dealing with adversity, specifically, choosing to have an impact on one's environment, managing change pro-actively. Research supports this relationship between cognitive hardiness and coping style. Beasley *et al.*, (2003) found that *cognitive hardiness* was able to moderate the negative effects of *emotion-oriented coping*. Nowack (1989) found that *cognitive hardiness* had a significant positive relationship with *problem-focussed coping* and a negative relationship with *avoidance*. Crowley, Hayslip and Hobdy (2003) found that hardiness predicted planful coping and positive reappraisal of problem situations.

Cognitive hardiness, stress and health

Cognitive hardiness has been shown to buffer the negative effects of life stress (Kobasa, 1979; Kobasa, Maddi & Kahn, 1982; Beasley *et al.*, 2003; Rhodewalt and Zone, 1989) and thus is seen as a protective mechanism. Nowack (1989) found that hardiness was a strong predictor of psychological distress, but not of physical ill-health.

There has been debate as to whether this buffering effect is consistent and while some reviewers report a range of positive findings (Orr & Westman, 1990)

others take a more negative view (Funk, 1992). There has been discussion of the hardiness being linked to neuroticism, particularly in relation to the negative items on hardiness scales (Sinclair & Tetrick, 2000), with perhaps only negative items tapping the hardiness construct. This suggests caution in scale interpretation, however, the stress buffering effects reported by some authors suggest that cognitive hardiness warrants attention as a potential protective mechanism.

Explanatory style

Explanatory style is a term used to denote a person's beliefs, whether optimistic or pessimistic, about life events (Seligman, 1990). Specifically, an optimistic explanatory style is associated with a generalised positive expectancy that one will experience good outcomes, while a pessimistic style is associated with negative expectations (Scheier & Carver, 1987). Seligman differentiates optimists from pessimists on the tendency to use three cognitive attributions, those of personalisation, permanency and pervasiveness. He suggests that a pessimist's typical response to a stressful life event would be:

"It's me, it's going to last forever, it's going to undermine everything I do."

p. 44.

Such a stance could be expected to raise feelings of helplessness, which may in turn lead to depression (Hiroto, 1974; Seligman, 1990).

Explanatory style and other resilience mechanisms

It has been well established that explanatory style links with other resilience mechanisms. It is known that optimists are inclined to use a more active and less avoidant approach to dealing with stress (Aspinwall & Taylor, 1992; Carver *et al.*, 1993). The cognitively hardy are described generally as optimistic in outlook (Orr & Westman, 1990). Sharpley and Yardley (1999) found that cognitive hardiness was better able to predict depression-happiness among the elderly than was explanatory

style. A recent study suggests that hardiness and optimism have similar effects but that hardiness involves a more consistent task orientation than does optimism, which in turn produces a more significant effect on health (Maddi & Hightower, 1999). In terms of resilience, the benefits of an optimistic explanatory style suggest that it is a protective mechanism while in contrast, pessimism can be seen as a vulnerability mechanism.

Procrastination

Procrastination can be defined as the purposeful delay of the start or completion of a task (Solomon & Rothblum, 1984). Some have chosen to describe it on the basis of self-defeating and irrational behaviour, however this is limiting, as research shows that it can sometimes produce positive feelings in the individual, particularly in the short term (Tice & Baumeister, 1997) and is not always seen as negative (Milgram, Marshevsky & Sadeh, 1994; Schouwenberg, 1995).

Research suggests that 20-30% of the population procrastinate on general tasks (Harriott & Ferrari, 1996). Much research effort has focussed on procrastination in the academic setting as this is known to be a significant problem area, with up to 70% of students procrastinating on academic tasks (Ellis and Knaus, 1977). For many of these, procrastination is limited to a school setting (Brownlow & Reasinger, 2000).

Solomon and Rothblum (1984) emphasise the importance of seeing procrastination as a complex interaction of behavioural, cognitive and affective components.

Procrastination and coping

It is known that procrastination interacts with coping style and in particular, *emotion focussed coping* (Corace, Pychyl & Ferrari, 1999) and lack of *task-focussed coping* (Schouwenberg, 1995; Flett *et al.*, 1995). Modest correlations have also been

shown between *procrastination* and *avoidance oriented coping* in the form of *distraction* (Flett *et al.*, 1995). The overlap between *procrastination* and *emotion focussed coping* has led one research group to propose that the former is merely an example of the latter (Corace *et al.*, 1999), but this has not been fully explored.

Procrastination, explanatory style and cognitive hardiness

Lay (1988) proposes the existence of two distinct types of underachieving procrastinators differentiated on the basis of explanatory style. Research suggests that for those who procrastinate, optimism is able to partially predict adjustment to stressful life events (Jackson, Weiss & Lundquist, 2000). To date, there have been no reported studies comparing the relative effects of cognitive hardiness on outcomes for procrastinators.

Procrastination, stress and health

Research has shown that procrastinators often think poorly of, or have a desire to change, their behaviours (Solomon & Rothblum, 1984). Lay, Edwards, Parker and Endler (1989) found that high procrastinators were more likely than low procrastinators to promise themselves 'that things will be different next time'. A number of authors have reported this negative relationship between procrastination and perceived stress (Sirois, Pychyl & Ferrari, 2003; Flett *et al.*, 1995; Lay *et al.*, 1989; Corace *et al.*, 1999; Schouwenberg, 1995).

In spite of research supporting the negative effects of procrastination on health, many procrastinators would state that their behaviour allows them to avoid stress. There is evidence in the academic setting to suggest that this is the case, at least in the short term, when deadlines are distant (Tice & Baumeister, 1997). In the longer term, however, procrastinators experience negative effects in the form of increased stress and health problems when facing deadlines, as well as behavioural shortfalls, such as lower grades (Tice & Baumeister, 1997). A recent study

confirmed this, showing that those who procrastinate only experience negative health effects when they perceive their circumstances to be stressful (Sirois *et al.*, 2003). In terms of resilience, these results suggest that it is the interaction between procrastination and stress that produces vulnerability. Thus, procrastination could be considered to increase vulnerability through indirect pathways.

The present study

While many studies have examined the role of resilience in relation to stress and health, the interaction between resilience and procrastination has not been fully explored. It has been shown that stress plays a significant mediating role in determining whether one who procrastinates will experience ill-health. However, the potential of resiliency mechanisms to buffer the effects of procrastination on stress have not been explored. Nor have the relative strengths of the relationships between these variables been examined.

This study aims to explore the pathways of these relationships, to determine whether interactions between these variables are direct or indirect. Factor and regression analysis will be used in an attempt to predict health measures from a range of resiliency and coping variables.

Hypotheses

The hypotheses to be tested are as follows. Firstly, that resilience, as measured by coping style, cognitive hardiness and explanatory style, will have direct effects on stress. Secondly, that resilience as measured above, will have direct effects on psychological health. And thirdly, that resilience measures will also impact on psychological health through an interaction with stress.

In addition, it is hypothesised that procrastination will have direct effects on stress and that procrastination will have indirect effects on psychological health,

mediated by its interaction with stress, consistent with the recent findings of Sirois *et al.*, (2003).

A final prediction relates to the relationship between *procrastination* and *emotion-focussed coping*. It is hypothesised that, consistent with the findings of Corace *et al.*, (1999), *procrastination* will not make a unique contribution to the prediction of stress and health once the effects of *emotion-focussed coping* have been controlled.

Method

Participants

This study involved 156 female and 25 male Psychology 1 and 2 students (N = 181), studying at the University of Tasmania in 2003 and 2004. While only female students were invited to participate, 25 of the completed questionnaire packages were found to have been completed by males. No other identifying features of participants were obtained.

Materials

Participants completed a questionnaire package that contained the Life Orientation Test - Revised, Coping Inventory for Stressful Situations, Cognitive Hardiness Scale, General Procrastination Scale, Adult Inventory of Procrastination, Procrastination Assessment Scale for Students, Perceived Stress Scale and the General Health Questionnaire. The scales were placed in packets in counterbalanced order. No differences in scores were found through counterbalancing, thus data was combined across order for all subsequent analyses.

Measures

This study has a number of explanatory variables, including coping style, cognitive hardiness and explanatory style. The study also uses 6 other explanatory variables which measure different aspects of procrastination. The first of these are

measures of general procrastination, with specific emphasis on firstly avoidant behaviours and secondly arousal producing tendencies. The third measure is of tendency to delay on academic tasks, the fourth is the degree of upset that such a delay produces. The fifth is a measure of the desire to change (and to decrease academic procrastination behaviours) while the sixth is a measure of the number of reasons endorsed for procrastinating on academic tasks. The 2 dependent variables are psychological distress and perceived stress.

Explanatory Variables

Life Orientation Test – Revised (LOT-R). The LOT-R (Scheier, Carver & Bridges, 1994) was used to measure explanatory style. This is a 10 item questionnaire. Negative items are reversed. Four filler items are included but are not used for calculation of scores. For the purposes of this study, scores equated to the degree of optimism endorsed. The LOT-R uses a 5-point Likert-type scale with end point designations of Strongly disagree (0) to Strongly agree (4). Respondents indicated the degree to which they agree with each statement. Some sample items are: *In uncertain times, I usually expect the best* (positive) and *If something can go wrong for me it will* (negative). The authors report a coefficient alpha of .82. For validation purposes (Scheier, Carver, & Bridges, 1994), in the current study, the scale was divided into two subscales on the basis of positive versus negatively worded items. Coefficient alphas of .70 and .80 were obtained for the positive and negative item subscales respectively.

Coping Inventory for Stressful Situations (CISS). The CISS (Endler & Parker, 1990b) was used to identify preferred coping style. This 48 item inventory differentiates between three general types of coping: Task-focussed, Emotion-focussed and Avoidance oriented. The *Avoidance* subscale is further divided into subscales of *Distraction* and *Social Diversion*. The inventory uses a 5-point Likert-

type scale with end-point designations of Not at all (1) to Very much (5).

Respondents indicate how much they engage in a particular activity when they encounter a stressful situation. Some examples are: *Schedule my time better* (Task-focussed), *Become very upset* (Emotion-focussed), and *Visit a friend* (Avoidance-oriented). Sixteen items load on each of the three basic subscales, while 8 load on Distraction and 5 on Social Diversion. Internal consistencies for the female undergraduate population range from .78 to .90 (Endler and Parker, 1990b). Test-retest reliability is reported as moderate to high with Task and Emotion focussed coping having the highest reliabilities while Distraction and Social Diversion focussed coping had more moderate ratings from .59 to .60. In the current study, coefficient alphas of .91, .90, .86, .80 and .76 were obtained for Task, Emotion and Avoidant oriented coping, Distraction and Social Diversion respectively.

Cognitive Hardiness Scale (CHS). The CHS (Nowack, 1990) was used to measure cognitive hardiness. This scale was developed from Kobasa's (1979) original cognitive hardiness model involving the 3 concepts of Commitment, Control and Challenge. The CHS is a 30 item scale, although in this case two items were dropped (as per Sharpley & Yardley, 1999) as they did not relate to the student population. A 5-point Likert-type scale is used ranging from Strongly agree (1) through to Strongly disagree (5). Respondents indicate the degree to which they agree with each statement. Samples are: *By taking an active part in political and social affairs, people can strongly influence world events and politics* (commitment), *In general, I would prefer to have things well planned out in advance rather than deal with the unknown* (control), *Becoming a success is mostly a matter of working hard; luck plays little or no role* (Challenge). Negative items are reversed. Although items are drawn from Kobasa's three domains, the scale provides only a single score. An internal consistency of .83 is reported (Nowack,

1990). Low scores on the scale equate to high levels of cognitive hardness. For validity purposes the scale was divided into two subscales on the basis of positive and negative items (see Sinclair & Tetrick, 2000). Alpha coefficients of these subscales were .63 for the positive items and .85 for negative items.

General Procrastination Scale (GP) Scale. The GP Scale (Lay, 1986) was used to measure procrastination across a variety of general tasks. While this scale measures general procrastination, validity studies suggest it particularly measures arousal based behaviours; those who score high on this scale tend to procrastinate in order to increase arousal (Ferrari, Johnson, & McCown, 1995).

The scale contains 20 items, rated on a 5-point Likert type scale from Very Untrue (1) to Very True (5). Respondents indicate how much each statement is true for them. Samples are: *I usually make decisions as soon as possible* (positive) and *A letter may sit for days after I write it before I mail it*. Positive items are reversed. High scores on this scale indicate high level of general procrastination. Internal consistency of .88 has been reported for women (Lay, 1987) and Retest Reliability of .80 (Ferrari, 1989) on this scale. A Coefficient alpha of .88 was obtained in the current study.

Adult Inventory of Procrastination (AIP). The AIP (McCown & Johnson, 1989, cited in Ferrari, 1995) is a 15-item inventory designed to measure procrastination on non-academic tasks. In particular, the inventory has been found to measure procrastinatory behaviour motivated by avoidance, to protect one's self-esteem (Ferrari, 1992). Experimentation with 5, 7 and 9-point Likert-type scales by the authors did not produce meaningful differences (Ferrari, Johnson & McCown, 1995) so for the purposes of this study a 5-point scale was used with end point designations of Strongly disagree (1) and Strongly agree (5). Respondents indicate the degree to which they agree with each statement. Sample items are: *I pay my bills*

on time (positive) and *I find myself running out of time* (negative). Positive items are reversed. As with the GPS, high scores on the AIP indicate high levels of procrastination. A reliability coefficient of .79 has been reported by McCown and Johnson (1989). Scores on the AIP have been found to not relate significantly to scores on the GP scale, suggesting that the two scales measure different constructs (Ferrari, 1992). In the current study a reliability coefficient of .86 was obtained.

Procrastination Assessment Scale-Students (PASS). The PASS (Solomon & Rothblum, 1984) was used to measure Academic Procrastination. The scale measures both cognitive and behavioural factors. The PASS is made up of two parts. In the first, respondents consider 6 distinct tasks related to academic life and complete three, 5-point Likert-type scales for each of these tasks indicating: 1 (Delay) the extent to which they procrastinate on this task; 2 (Upset) the extent to which this procrastination causes them a problem; and 3 (Change perspective) the level of desire to stop procrastinating on this task. Examples of academic tasks include studying for an exam or keeping up with weekly reading assignments. In the second part of the PASS, the respondent is presented with the scenario of procrastinating on an assignment and then is asked to rate 13 reasons for procrastinating on that task, in terms of likelihood of that reason being true, using a 5-point Likert-type scale. Samples are: lack of self-confidence; laziness; peer influence. Minor changes in wording were made to make the items in this scale more suited to an Australian population. Split-half reliability for the scale is rated by the authors at .26 for Part 1 and .81 for Part 2. Retest reliability was rated at .74 and .56 respectively. The current study considered the three subscales of Delay, Upset and Desire for Change separately (see Flett *et al.*, 1995). Coefficient alphas for these subscales were .71, .71 and .77 respectively. An alpha rating of .80 was obtained for Part 2 of the scale.

Dependent variable measures

General Health Questionnaire – 30 item (GHQ-30). The GHQ-30 (Goldberg and Williams, 1988) was used as a measure of psychological distress. The scale measures health and psychopathology across four areas: somatic symptoms, anxiety and insomnia, social dysfunction and severe depression. It is a 30-item scale. The four subscales provide individual scores or can be summed for a total health score. In the current study, total scores were used as a measure of general psychological health. The authors suggest several scoring techniques. In the current study, a 4-point Likert type scale was used. Respondents are asked to answer questions based on their experiences over recent weeks. Responses vary depending on item wording, which allows for both positive and negative items to be included. An example of a positive item is: *Have you recently been finding it easy to get on with other people.* Responses to such items have end point designations of Better than usual (1) to Much less well (4). Responses to negative items such as: *Have you recently lost much sleep over worry?* have end point designations of Not at all (1) to Much more than usual (4). High scores indicate high levels of symptoms. Goldberg and Williams (1988) report test-retest reliability of .77 and split half coefficients of .92. In the current study a Coefficient alpha of .95 was obtained.

Perceived Stress Scale (PSS). The PSS (Cohen, Kamarck & Mermelstein, 1983) was used to measure the degree to which situations in life are appraised as stressful. The scale has 14 items and uses a 5-point Likert-type scale with end-point designations of Never (0) and Very often (4). Respondents are to answer how often they thought or felt a certain way. Sample items are: *In the last month, how often have you found that you could not cope with all the things you had to do?* (negative), and *In the last month, how often have you felt that you were on top of things?*

(positive). Positive items are reversed so that high scores on this scale suggest high levels of perceived stress. The scale had a coefficient alpha reliability of .84 and .85 for two student samples (Cohen, *et al*, 1983) with a retest reliability of .85 in the short term (2 days). The current study yielded a coefficient alpha of .87.

Issues with use of the proposed scales

The Life Orientation Test- Revised

The literature on resilience has highlighted difficulties in measurement. The LOT-R is a widely used tool for determining explanatory style but confusion remains over its interpretation. While there is agreement that its positive items are a valid measure of optimism, there has been speculation that negative items may measure a different construct (eg neuroticism (Smith, Pope, Rhodewalt & Poulton, 1989; Williams, 1991). Other researchers (Myers & Steed, 1999; Plomin, *et al*, 1992) question the validity of using the LOT to distinguish optimists from pessimists on the basis of high and low scores, claiming that low optimism does not necessarily equate with pessimism. The authors of the revised scale (Scheier *et al.*, 1994) suggest to first treat optimism and pessimism as bipolar on the scale, and then to follow up with subsidiary analyses, separately examining the effects of positively and negatively worded items (Scheier *et al.*, 1994). The current study has followed this suggestion.

The Cognitive Hardiness Scale

The Cognitive Hardiness Scale has also met with some criticism, with questions over whether the concept of hardiness can be separated from the construct of neuroticism (Funk, 1992), particularly as many scales make significant use of negative items (Rhodewalt & Zone, 1989). Other researchers (Sharpley & Yardley, 1999) recommend care in its interpretation and further research into its validity. Sinclair and Tetrick (2000) investigated the validity of a number of scales and found that hardiness was distinct from neuroticism. However, by analysing positive and

negative items separately they noticed that different factors emerged. Analysis using the positive items produced the stress buffering effects found in other research on hardiness, while the analysis using the negative items did not (although they were found to predict anxiety). Sinclair and Tetrick (2000) discuss the possibility that item wording taps into different response biases, and underline the need to increase the use of positive items in hardiness scales. On the basis of their review they offer the following conclusion:

“...hardiness consists of two separate cognitive processes - one in which people differ on stress resilience and a second in which people differ in the extent to which they are sensitive to stress”. Sinclair and Tetrick (2000, p. 21)

To control for the potentially different nature of positive and negative items on the cognitive hardiness scale, this study has separated the scale into two subscales of positive (*CHS positive*) and negative (*CHS negative*) items.

The Procrastination Assessment Scale for Students

The Procrastination Assessment Scale for Students (Solomon & Rothblum, 1984) was chosen for use in the current study as a measure of academic procrastination. As noted by some research teams (Flett *et al.*, 1995; Milgram *et al.*, 1994), analysis of data using the Part 1 and Part 2 separation proposed by the authors limits use of data, by combining data for individuals who are upset by their procrastination behaviour with those who are not. It is important to recognise that those who delay tasks often do not express distress (Milgram *et al.*, 1994; Schouwenberg, 1995) and combining results has potential to confuse findings on the relationship between procrastination and stress. On this basis the current study has divided the scale into 4 subscales, namely Delay (*PASS Delay*); Upset (*PASS Upset*); Desire for Change (*PASS Chg*) and Reasons for procrastination (*PASS Reasons*).

Procedure

Participants were recruited by an invitation to participate made during psychology lectures and practical classes in the early and middle weeks of semester 1 and 2, 2003 and semester 1, 2004. Participants were provided with an information sheet advising that their participation was voluntary (see Appendix A), along with a questionnaire package. Each participant signed a consent form, which was returned with the questionnaire package. Participants completed a range of self-report measures in their own time. Questionnaires were returned to a locked pigeonhole in the Psychology office of both the Northern and Southern campuses of the University of Tasmania. Only female students were invited to participate. Those students in Psychology 1 received one hour of credit towards their yearly research participation quota. Upon receipt of the questionnaire package, consent forms were removed from the package to prevent identification of participants.

Results

The present study revealed significant correlations between a number of variables (see Table 1.). These include negative relationships between both of the dependent variables, perceived stress (*PSS*) and psychological distress (*GHQ*), and the resilience variables of optimism (*LOT-R Pos*), cognitive hardness (*CHS Pos*) and *task-focussed coping*. The resilience variables also correlated significantly with each other.

Results showed positive relationships between both of *PSS* and *GHQ* and the vulnerability variables of *emotion-focussed coping*, negative cognitive hardness (*CHS Neg*) and lack of optimism (*LOT-R Neg*). These three variables were also correlated significantly with each other.

Procrastination variables were correlated positively with both dependent variables. The measures of general (non-academic) procrastination, *AIP* and *GPS*, were highly correlated with each other.

The dependent variables of *PSS* and *GHQ* were highly correlated with each other.

The number of male participants ($N = 25$) was not sufficient to allow differentiation of males and females in this study.

Table 1. Pearson Correlations of resilience / vulnerability and procrastination variables, and perceived stress and psychological distress

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 GHQ-30																	
2 PSS	.83**																
3 Task	-.28**	-.33**															
4 Emotion	.69**	.72**	-.22**														
5 Avoidance	.11	.14	-.11	.17*													
6 Distraction	.18*	.17*	-.27**	.22**	.87**												
7 Social Diversion	.00	.07	.08	.07	.80**	.44**											
8 PASS Reasons	.43**	.45**	-.24**	.42**	.27**	.31**	.15*										
9 PASS Delay	.32**	.41**	-.45**	.37**	.12	.23**	-.03	.46**									
10PASS Upset	.36**	.47**	-.42**	.46**	.12	.22**	.01	.45**	.81**								
11 PASS Chg	.25**	.32**	-.21**	.30**	.01	.08	-.03	.30**	.61**	.70**							
12 AIP	.26**	.37**	-.40**	.36**	.13	.17*	.07	.36**	.58**	.56**	.41**						
13 GPS	.28**	.40**	-.50**	.37**	.18*	.27**	.06	.38**	.66**	.59**	.40**	.81**					
14 LOTR Pos	-.39**	-.47**	.31**	-.32**	.05	-.06	.16*	-.19*	-.24**	-.26**	-.06	-.17*	-.25**				
15 LOTR Neg	.39**	.46**	-.12	.43**	.03	.05	-.02	.25**	.30**	.35**	.28**	.28**	.29**	-.31**			
16 CHS Pos	.32**	.33**	-.31**	.25**	-.15*	-.02	-.22**	.16*	.20**	.24**	.13	.20**	.23**	-.42**	.31**		
17 CHS Neg	-.63**	-.64**	.26**	-.57**	.04	-.13	.19**	-.42**	-.38**	-.43**	-.26**	-.24**	-.34**	.48**	-.59**	-.44**	

* Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed)

Note 1. for Table 1. *GHQ* refers to General Health Questionnaire, *PSS* refers to Perceived Stress Scale, *Task* refers to task-focussed coping, as measured on the Coping Inventory for Stressful Situations (CISS), *Emotion* refers to emotion-focussed coping (on the CISS), *Avoidance* refers to avoidance oriented coping (on the CISS), *Distraction* refers to distraction style coping (on the CISS), *Social Diversion* refers to social diversion style coping (on the CISS). *PASS reasons* refers to Reasons for Procrastination which is Part 2 of the Procrastination Assessment Scale for Students (PASS), *PASS Delay* refers to delay scores on the PASS, *PASS Upset* refers to upset scores on the PASS, *PASS Chg* refers to desire for change scores on the PASS. *AIP* refers to the Adult Inventory of Procrastination, *GPS* refers to the General Procrastination Scale, *LOTR pos and LOTR neg* refer to the subscales of positive and negative items (respectively) of the Life Orientation Test – Revised, *CHS pos and CHS neg* refer to the subscales of positive and negative items (respectively) of the Cognitive Hardiness Scale.

A Factor Analysis was carried out as a data reduction procedure. This was with the intention of simplifying predictors to enter into a Regression Analysis, to determine which variables were able to predict the dependent variables, *GHQ* and *PSS*.

Several different models of factor analysis were considered and it was decided that the 4 factor Principal Components Analysis with Varimax Rotation was able to provide the most psychologically meaningful representation of the data. Using the Eigenvalue greater than 1 criterion, a 4 factor solution was obtained and in this solution 38% of the non-redundant residuals had absolute values more than .05. One of the variables (*PASS Reasons*) was not substantially related to any of the factors. It was decided to include a fifth factor and in this solution only 28% of non-redundant residuals had absolute values greater than .05, providing an acceptable fit. Furthermore, all of these factors were psychologically meaningful and this model also accounted for the variable *PASS Reasons*. The five factors identified are presented in Table 2. These factors explained a cumulative variance of 75%. The factors have been labelled as follows: *Academic Procrastination* (Factor 1); *Avoidance Orientation* (Factor 2); *Emotion Orientation* (Factor 3), *General Procrastination* (Factor 4) and *Task Orientation* (Factor 5).

Table 2. 5 Factor Varimax Principal Component Solution

	Factors				
	1	2	3	4	5
Task	-.28	-.12	.16	-.38	.69
Emotion	.28	.17	.68	.14	-.15
Avoidant	.04	.98	.03	.07	.06
Distraction	.17	.87	.01	.02	-.21
Social Diversion	-.09	.80	.04	.12	.33
PASS Reasons	.51	.32	.34	.03	-.16
PASS Delay	.77	.06	.13	.39	-.21
PASS Upset	.81	.06	.23	.31	-.17
PASS Change	.84	-.08	.15	.16	.10
AIP	.30	.07	.18	.87	-.08
GPS	.34	.13	.17	.81	-.23
LOTR Positive	-.02	.03	-.37	-.02	.70
LOTR Negative	.10	-.02	.81	.19	-.06
CHS Positive	.01	-.15	.32	.11	-.66
CHS Negative	-.27	.05	-.75	.01	.42

Correlations between the five factors and the dependent variables of *GHQ* and *PSS* can be found in Table 3. Factors 1, 3 and 5 correlated highly with both *PSS* and

GHQ. Factor 4 also correlated with *PSS*, but only at the 0.05 level. Factor 2 was not significantly correlated with either dependent variable.

Table 3. Pearson Correlations between the dependent variables of General Health Questionnaire and Perceived Stress Scale, and Principal Factor scores.

	GHQ	PSS
General Health Questionnaire (GHQ)		.83**
Perceived Stress Scale (PSS)	.83**	
Factor 1 (Academic Procrastination)	.24**	.30**
Factor 2 (Avoidance)	.11	.13
Factor 3 (Emotion Orientation)	.57**	.59**
Factor 4 (General Procrastination)	.03	.16*
Factor 5 (Task Orientation)	-.31**	-.31**

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

The five principal factors identified above were entered into a Stepwise Regression Analysis to consider their ability to predict GHQ and PSS respectively. Using *GHQ* as the dependent variable, three of the factors: Factor 3 (*Emotion Orientation*), Factor 5 (*Task Orientation*) and Factor 1 (*Academic Procrastination*) all made a unique contribution at the .01 level while *Avoidance Orientation* made a contribution at the .05 level. Factor 4 (*General Procrastination*) did not make a unique contribution to prediction of *GHQ*. (See Table 4)

Table 4. Summary of Multiple Regression Analysis for Variables Predicting Psychological Distress (assessed by the GHQ) (N = 181)

Variable	B	SE B	β
Factor 3 (Emotion Orientation)	8.55	.81	.57**
Factor 5 (Task orientation)	-4.57	.81	-.31**
Factor 1 (Academic Procrastination)	3.66	.81	.24**
Factor 2 (Avoidance)	1.71	.81	.11*
$R^2=.48$, * $p < .05$; ** $p < .01$,			

Multiple Regression Analysis showed that all five factors were able to contribute significantly to the prediction of perceived stress (*PSS*). (See Table 5.)

Table 5. Summary of Multiple Regression Analysis for Variables Predicting Perceived Stress, as assessed on *PSS* (N = 181)

Variable	B	SE B	β
Factor 3 (Emotion Orientation)	4.81	.43	.58**
Factor 1 (Academic Procrastination)	2.47	.42	.30**
Factor 5 (Task Orientation)	-2.12	.45	-.25**
Factor 4 (General Procrastination)	1.36	.42	.17**
Factor 2 (Avoidance Orientation)	.91	.42	.11*
$R^2=.54$, * $p < .05$; ** $p < .01$			

Regression results revealed that both general and academic procrastination factors made a unique contribution to the prediction of *PSS*. Results also show that academic procrastination, but not general procrastination was able to predict GHQ.

The pathways of these relationships were further investigated using hierarchical regression analyses. *PSS* was entered stepwise into the analysis at step 1 followed by the five factors identified above, at step 2. Table 6 shows the factors that were significant in their ability to predict psychological distress, after accounting for perceived stress.

Table 6. Summary of Hierarchical Regression Analysis for Predictors of Psychological Distress, as assessed on *GHQ* (N = 181)

Variable	B	SE B	β	ΔR^2
Step 1				.68
Perceived Stress Scale	1.52	.08	.83	
Step 2				.03
Perceived Stress Scale	1.39	.10	.76**	
Factor 3 (Emotion Orientation)	2.16	.80	.14**	
Factor 4 (General Procrastination)	-1.39	.64	.09*	
Total Variance explained				.71

$R^2=.71$, * $p < .05$; ** $p < .01$

The factors that were seen to predict psychological distress were then entered directly into a regression analysis to determine their ability to predict perceived stress. These results are presented in Table 7.

Table 7. Summary of Hierarchical Regression Analysis for Factors Predicting Perceived Stress, as assessed on the PSS (N = 181)

Variable	B	SE B	β
Factor 3 (Emotion Orientation)	4.94	.50	.60**
Factor 4 (General Procrastination)	1.44	.49	.18**

$R^2=.38,$ * $p < .05$; ** $p < .01$

Figure 1 shows a path diagram that summarises these relationships.

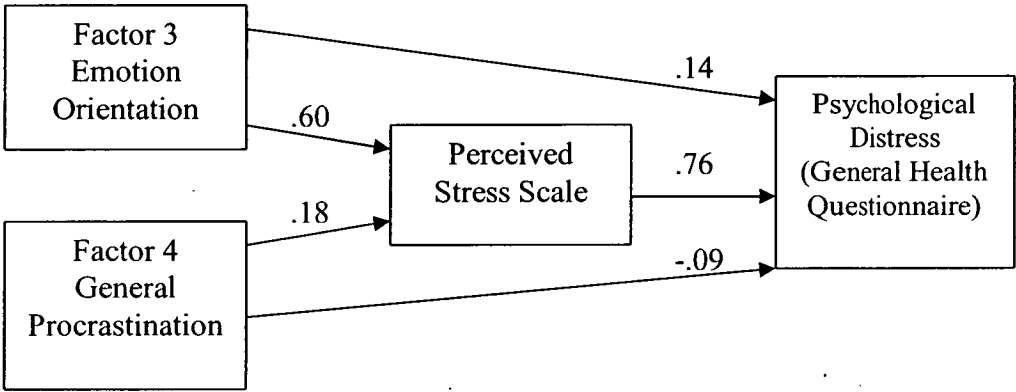


Figure 1. Path Diagram showing β values of direct and indirect effects of factor 3, Emotion Orientation and factor 4, General Procrastination, on scores on the General Health Questionnaire, mediated by scores on the Perceived Stress Scale. All path coefficients are significant at $p<.05$.

Discussion

In general terms, the results of this study support the main hypotheses. Each of the variables that were proposed as protective mechanisms, namely *task-focussed coping*, positive items on cognitive hardiness (*CHS pos*) and optimism (*LOT-R pos*) correlated strongly, and negatively, with both perceived stress and psychological distress. Similarly, the variables that were proposed as risk mechanisms, namely *emotion-focussed coping*, the *procrastination* variables, lack of optimism (*LOT-R*

Neg), and lack of cognitive hardiness (*CHS Neg*) all correlated strongly and positively with both perceived stress and psychological distress.

Previous research (Scheier, Carver & Bridges, 1994; Sinclair & Tetrick, 2000) prompted a division of the *LOT-R* and *CHS* (respectively) into positive and negative subscales. These divisions were supported in the subsequent factor analysis that showed the subscales to load on separate factors. In contrast to the findings of Ferrari (1992), the *Adult Inventory of Procrastination* and the *General Procrastination Scale* were found to be highly correlated in the current study.

Factor analysis and subsequent correlations of factors with perceived stress and psychological distress provided further support for the predictions of the study. As presented above, analysis of the data revealed five distinct factors. All academic procrastination measures loaded on the first factor, labelled Academic Procrastination.

The second factor was termed *Avoidance Orientation* on the basis of its loadings on the CISS subscales of *avoidance*, *distraction* and *social diversion*. There was no other strong loading from other variables onto this factor.

The third factor was termed *Emotion Orientation*. It loaded high on *emotion-focussed coping* as well as on the negative items from both the *LOT-R* and *CHS*. These three variables loaded almost exclusively on this factor, with no significant impact on any other factors. The fourth factor was termed *General Procrastination* as it loaded on the two general procrastination measures, *AIP* and *GPS*.

The fifth factor to be identified in this study has been termed *Task Orientation* and may be seen as a resilience factor as it loads on those variables that have been shown to promote positive health effects (ie *task focussed coping*, *optimism* and *cognitive hardiness*).

Correlation of the five factors with the dependent variables revealed that, as predicted, the *Task Orientation* factor correlated strongly and negatively with both

perceived stress and *psychological distress*. Both the *Emotion Orientation* and *Academic Procrastination* factors were positively associated with both *perceived stress* and *psychological distress*. The *General Procrastination* factor was positively associated with *perceived stress* at the .05 level but not with *psychological distress*. Regression analysis revealed that all five factors contributed uniquely to prediction of *perceived stress* and all but *General Procrastination* contributed to prediction of *psychological distress*.

Factor 3 has been termed *Emotion Orientation*, however, the nature of this factor remains ambiguous. It is possible that it is a measure of vulnerability associated with stress and health. Another interpretation is that this factor reflects the construct of neuroticism, which has not been targeted through any direct measure in this study.

Regression analysis partly supported the predictions of this study as it showed that both *Emotion Orientation* / vulnerability and *General Procrastination*, as represented by factors 3 and 4 respectively, were shown to have direct effects on both *perceived stress* and *psychological distress*. Further regression analysis showed that these factors were able to directly predict *psychological distress*. *Perceived stress* was also a strong predictor of *psychological distress*. These results suggest both direct and indirect relationships between the factors of *Emotion Orientation* and *General Procrastination* and *psychological distress*, as measured by *GHQ*, with indirect effects mediated by *PSS*.

The indirect effect of *General Procrastination* on *psychological distress*, mediated by *perceived stress*, confirms the findings of Sirois et al., 2003. However, in addition to this effect, regression and path analysis with the current data suggest an additional, small but significant direct effect of procrastination on *psychological distress*. This effect is only apparent when perceived stress is being controlled. It is

notable that this direct relationship is in a negative direction, while pair-wise correlations between both general procrastination scales and *GHQ* are in a positive direction. These results suggest that, if it were possible to hold perceived stress as a constant, procrastination behaviours would predict small, positive health effects.

It is notable that the factor contributing most to prediction of *PSS*, namely *Emotion-Orientation*, is highly loaded with *emotion-focussed coping* and lack of *cognitive hardiness*, both of which have been shown in the literature to be predictors of poor outcomes in stress and health. Thus, the current results could be seen to replicate previous studies on the effects of resilience, or more appropriately, lack of resilience on health outcomes. The size of effects found in the current study suggests that lack of resilience (or perhaps the presence of vulnerability) had more impact than the presence of resilience. While the nature of the current study does not allow for assumptions of causality, the relative differences observed may have implications for therapeutic interventions. In the current study at least, the apparent effect size of *Emotion Orientation* over-rides the potential benefits of the resiliency factor (*Task Orientation*) and at the same time, has a substantially greater negative effect than the procrastination factors. These results suggest that there may be value in exploring reduction of emotion orientation in those who experience stress and psychological distress in academic settings.

The current study also sheds light on the contradictory results found in previous studies of the effects of cognitive hardiness on stress and health. In this study, positive and negative items on the CHS yielded differing results, with negative items loading strongly with pessimism and emotion-focussed coping. Similarly, positive and negative items on the LOT-R were also found to load on different factors, suggesting that in this case at least, different constructs were being tapped. A potential role for neuroticism cannot be excluded.

A final observation from the current study concerns the relationship between procrastination and *emotion-focussed coping*. While strong correlations exist between the procrastination variables and *emotion-focussed coping*, factor analysis showed them loading on separate factors. There was no evidence in the current results to support the proposal that procrastination is a sub-type of emotion-focussed coping.

Directions for Future Research

The current study is based on questionnaire data obtained from participants at one sampling point and on this basis there can be no assumption of causality. It would be of value to explore the effects of general procrastination on health at times when academic stress is known to be present compared to when it is not, (eg during an examination period, compared to holidays).

This study was based on a population of primarily female participants (86%) and numbers did not permit examination of gender differences. It would be of interest to consider the same relationships with a larger sample including equal numbers of males and females. It would also be of value to consider use of a student specific stress questionnaire rather than the more generic Perceived Stress Scale used in the current study.

Additionally, exploration of the interaction between *emotion-focussed coping*, the negative items on the *CHS* and *LOT-R*, and the construct of neuroticism would be of value. This would assist in determining whether observed “vulnerability” effects in the current study relate to neuroticism or whether they relate to a general vulnerability to stress brought about by lack of specific resilience qualities.

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